WHAT IS CLAIMED IS:

1. A current sensor for an apparatus, said current sensor comprising a conductor comprising a slit and at least one Hall effect device inserted at least partially within said slit, said conductor is configured to generate a magnetic field having a pre-determined shape, said Hall effect device configured to detect said pre-determined shape and generate an output.

2. An apparatus in accordance with Claim 1 wherein said apparatus comprises a residential electricity meter.

3. A current sensor in accordance with Claim 1 wherein said magnetic field has a pre-determined spatial dependence.

4. A sensor in accordance with Claim 1 wherein said Hall effect device output is substantially insensitive to magnetic fields having other than the pre-determined shape.

5. A sensor in accordance with Claim 1 wherein said current sensor further comprises a plurality of Hall effect devices.

6. A sensor in accordance with Claim 1 wherein said Hall effect device output comprises a non-linear component.

7. A sensor in accordance with Claim 5 wherein said plurality of Hall effect devices are separated by a pre-determined distance.

8. A sensor in accordance with Claim 1 wherein said magnetic field comprises at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from said first direction.

9. A sensor in accordance with Claim 1 wherein said magnetic field comprises at least two magnetic field components having the same direction.

10. A current sensor for an apparatus comprising a slit and at least one Hall effect device inserted at least partially within said slit, said conductor is configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from said first direction, and a pre-determined shape, said Hall effect device configured to detect said pre-determined shape and generate an output.

11. A residential electricity meter comprising a voltage sensor and a current sensor, said current sensor comprising a conductor comprising a slit and at least one Hall effect device inserted at least partially within said slit, said conductor is configured to generate a magnetic field having a pre-determined shape, said Hall effect device configured to detect said pre-determined shape and generate an output.

12. An electricity meter in accordance with Claim 11 wherein said electricity meter comprises a residential electricity meter.

13. An electricity meter in accordance with Claim 11 wherein said magnetic field has a pre-determined spatial dependence.

14. An electricity meter in accordance with Claim 11 wherein said Hall effect device output is insensitive to magnetic fields having other than the pre-determined shape.

15. An electricity meter in accordance with Claim 11 wherein said current sensor further comprises a plurality of Hall effect devices.

16. An electricity meter in accordance with Claim 11 wherein said Hall effect device output comprises a non-linear component.

17. An electricity meter in accordance with Claim 15 wherein said plurality of Hall effect devices are each separated by a pre-determined distance.

18. An electricity meter in accordance with Claim 11 wherein said magnetic field comprises at least a first magnetic field component having a first

direction and a second magnetic field component having a second direction different from said first direction.

19. An electricity meter in accordance with Claim 11 wherein said magnetic field comprises at least two magnetic field components having the same direction.

20. A residential electricity meter comprising a voltage sensor and a current sensor, said current sensor comprising a conductor comprising a slit and at least one Hall effect device inserted at least partially within said slit, said conductor is configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from said first direction, and a pre-determined shape, said Hall effect device configured to detect said pre-determined shape and generate an output

21. A method for sensing voltage and current in a residence, said method comprising:

providing an electricity meter comprising:

a voltage sensor; and

a current sensor, wherein the current sensor comprises a conductor comprising a slit and at least one Hall effect device inserted at least partially within the slit, wherein the conductor is configured to generate a magnetic field having a pre-determined shape, and the Hall effect device is configured to detect the pre-determined shape and generate an output.

22. A method in accordance with Claim 21 wherein providing an electricity meter comprises providing a residential electricity meter.

23. A method in accordance with Claim 21 further comprising providing a conductor configured to generate a magnetic field having a pre-determined spatial dependence.

24. A method in accordance with Claim 21 further comprising providing a Hall effect device output comprising a non-linear component.

25. A method in accordance with Claim 21 further comprising providing a plurality of Hall effect devices.

26. A method in accordance with Claim 25 wherein said plurality of Hall effect devices are each separated by a pre-determined distance.

27. A method in accordance with Claim 21 further comprising providing a conductor configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from the first direction.

28. A method in accordance with Claim 21 further comprising providing a conductor configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction the same as the first direction.

29. A method for sensing voltage and current in a residence, said method comprising:

providing a residential electricity meter comprising:

a voltage sensor; and

a current sensor, said current sensor comprising a conductor comprising a slit and at least one Hall effect device inserted at least partially within said slit, said conductor is configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from said first direction, and a pre-determined shape, said Hall effect device configured to detect said pre-determined shape and generate an output